GEORGIA INSTITUTE OF TECHNOLOGY — OFFICE OF CONTRACT ADMINISTRATION

PROJECT ADMINISTRATION DATA SHEET

[x] ORIGINAL [ ] REVISION NO. _____

Project No. A-3594 GTRI/~~GIT~~ DATE 7 / 25 / 83

Project Director: Barry Cown ~~School~~/Lab ECSL /EED

Sponsor: Teledyne-Brown Engineering

Type Agreement: Research Project Agreement A-3594 dated 1 July 1983 and P.O. #213321

Award Period: From 7/1/83 To ~~7/30/83~~ 8/31/83 (Performance) 7/30/83 (Reports)

Sponsor Amount:	This Change	Total to Date
Estimated:	$ 3,215	$ 3,215
Funded:	$ 3,215	$ 3,215

Cost Sharing Amount: $ _____ Cost Sharing No: _____

Title: Microwave Measurements with One-Day Seminar

ADMINISTRATIVE DATA OCA Contact Faith G. Costello Ext. 4820

1) Sponsor Technical Contact:

2) Sponsor Admin/Contractual Matters:

Mr. M. W. Ashley, Mgr., Subcontract Adm.
Teledyne-Brown Engineering
Cummings Research Park
300 Sparkman Drive
Huntsville, AL 35807

Defense Priority Rating: _____ Military Security Classification: _____

(or) Company/Industrial Proprietary: _____

RESTRICTIONS

See Attached _____ Supplemental Information Sheet for Additional Requirements.

Travel: Foreign travel must have prior approval – Contact OCA in each case. Domestic travel requires sponsor approval where total will exceed greater of $500 or 125% of approved proposal budget category.

Equipment: Title vests with GTRI

COMMENTS:

Advance payment of $3,215.00 made on ck. no. 160855 dated 8 July 83.

COPIES TO:

Project Director	Procurement/EES Supply Services	GTRI
Research Administrative Network	Research Security Services	Library
Research Property Management	Reports Coordinator (OCA)	Project File
Accounting	Research Communications (2)	Other I. Newton

FORM OCA 4-383

N-T-82-SR304

GEORGIA INSTITUTE OF TECHNOLOGY OFFICE OF CONTRACT ADMINISTRATION

SPONSORED PROJECT TERMINATION SHEET

Date 10/5/83

Project Title: Microwave Measurements With One-Day Seminar

Project No: A-3594

Project Director: Barry Cown

Sponsor: Teledyne - Brown Engineering

Effective Termination Date: 8/31/83

Clearance of Accounting Charges: 8/31/83

Grant/Contract Closeout Actions Remaining:

- [X] Final Invoice ~~and Closing Documents~~
- [ ] Final Fiscal Report
- [ ] Final Report of Inventions
- [ ] Govt. Property Inventory & Related Certificate
- [ ] Classified Material Certificate
- [ ] Other _____

Assigned to: ECSL (~~School~~/Laboratory)

COPIES TO:

~~Administrative Coordinator~~ RAN
Research Property Management
Accounting
Procurement/S[illegible]ply Services
Research Security Services
Reports Coordinator (OCA)
Legal Services (OCA)
Library
EES Public Relations (2)
Computer Input
Project File
Other COWN
GTRI

FORM OCA 10:781

A-3594

Georgia Institute of Technology
ENGINEERING EXPERIMENT STATION
Atlanta, Georgia 30332

19 September 1983

Mr. M. W. Ashley
Manager, Subcontract Administration
Small Business Coordinator
Teledyne Brown Engineering
Cummings Research Park
Huntsville, Alabama 35807

Reference: Teledyne Brown Engineering P. O. 213321
(Georgia Tech Project A-3594)

Subject: Final Letter Report

Gentlemen:

The purposes of this Final Letter Report are (1) to document the results of the transmission measurements for radar camouflage cloths supplied by Teledyne Brown Engineering, and (2) to herewith acknowledge in writing the cancellation of the proposed one-day seminar, as mutually agreed in our conversation on or about 18 August 1983. The transmission data included herein were obtained from the measurement set-up shown in Figure 1.

The approximate transmission results averaged over the entire X-band range of 8-12.4 GHz or the Ka-band range of 26-40 GHz are presented in the table on the following page. The plots of transmission loss versus frequency are presented in Figures 2 through 27.

The Electromagnetic Effectiveness Division (EMED) appreciates the opportunity to work with you in your efforts to develop optimum radar cloths. It would be our pleasure to work with you again in the near future.

Respectfully submitted,

Barry J. Cown
Project Director

Approved:

Charles E. Ryan, Jr.
Chief,
EM Effectiveness Division

TABLE OF APPROXIMATE TRANSMISSION LOSS VALUES AVERAGED OVER THE INDICATED FREQUENCY BAND

X-Band

Cloth	Sample	Avg. Transmission Loss (dB)	
		Warp	Filling
2155-A	1	13.5	15.5
	2	13.5	16.0
	3	13.5	16.0
2155-B	1	16.0	16.5
	2	17.0	18.0
	3	17.5	18.0
2155-C	1	14.0	15.0
	2	15.0	15.0
	3	14.0	16.0
		Direction 1	Direction 2
2155-K	1	9.0	10.0
	2	9.0	10.0

Ka-Band

Cloth	Sample	Avg. Transmission Loss (dB)	
		Direction 1	Direction 2
2155-K	1	3.0	4.5
	2	3.0	4.0

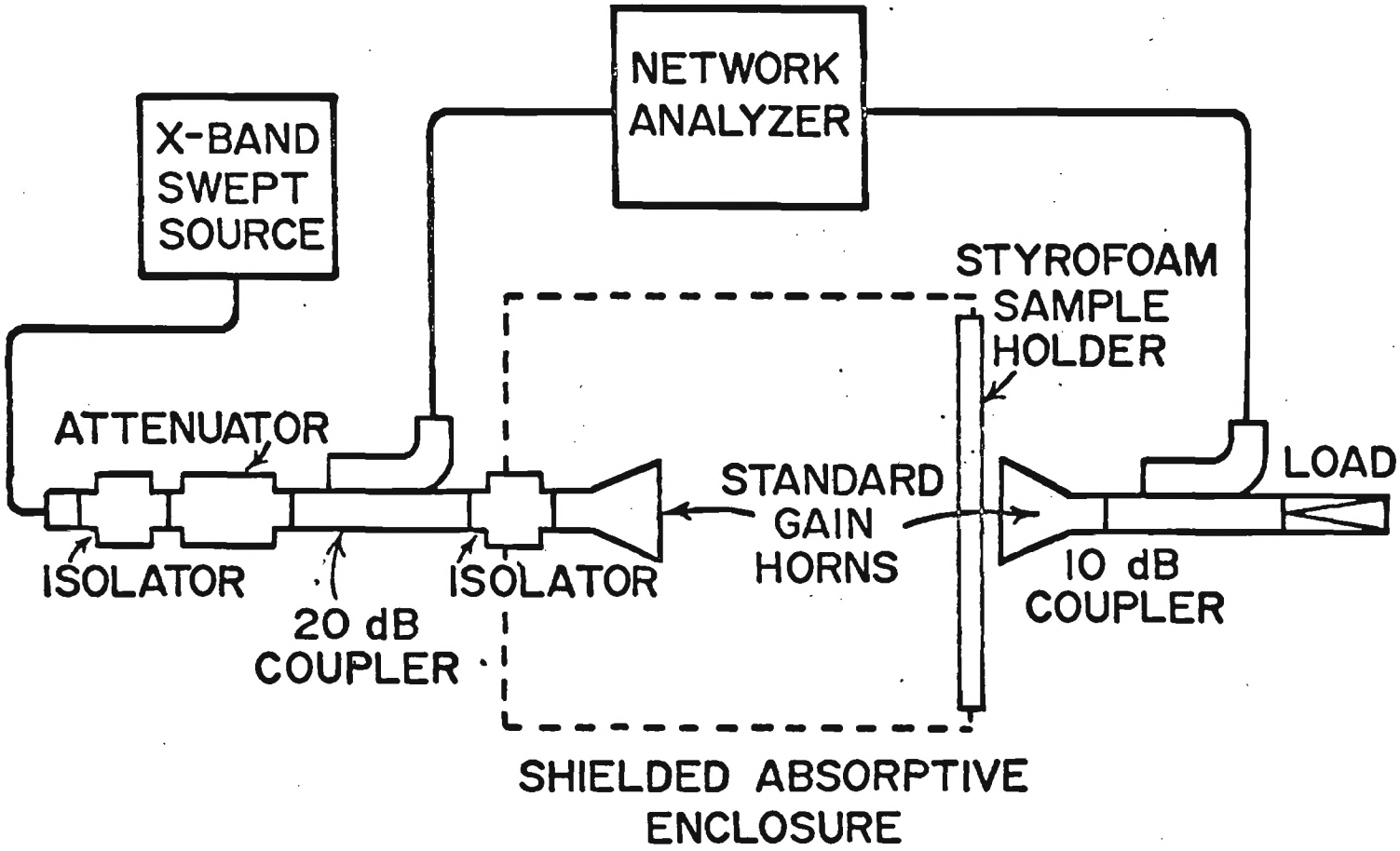

Figure 1. Schematic diagram of x-band swept frequency test system for radar transmission through cloths.

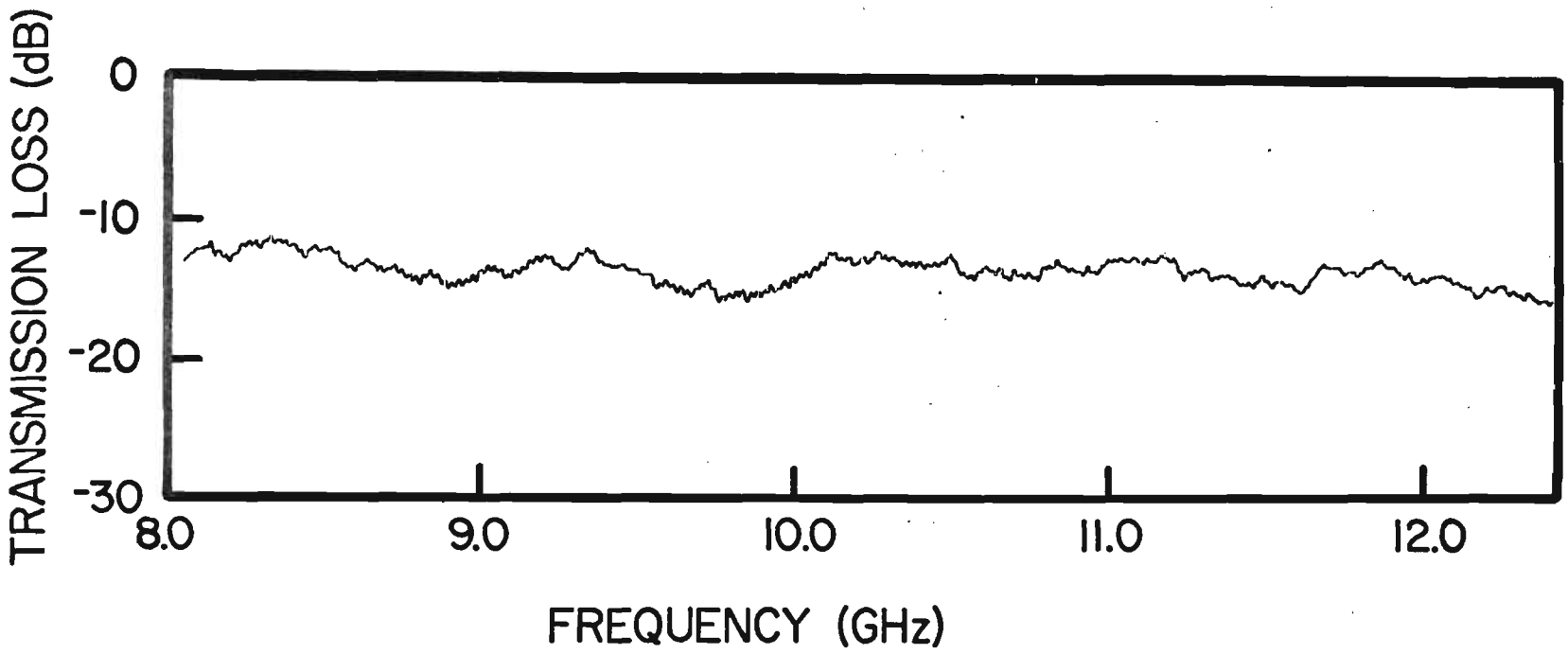

Figure 2. Transmission lows versus frequency for TBE radar camouflage cloth 2155-A-1 in the warp direction.

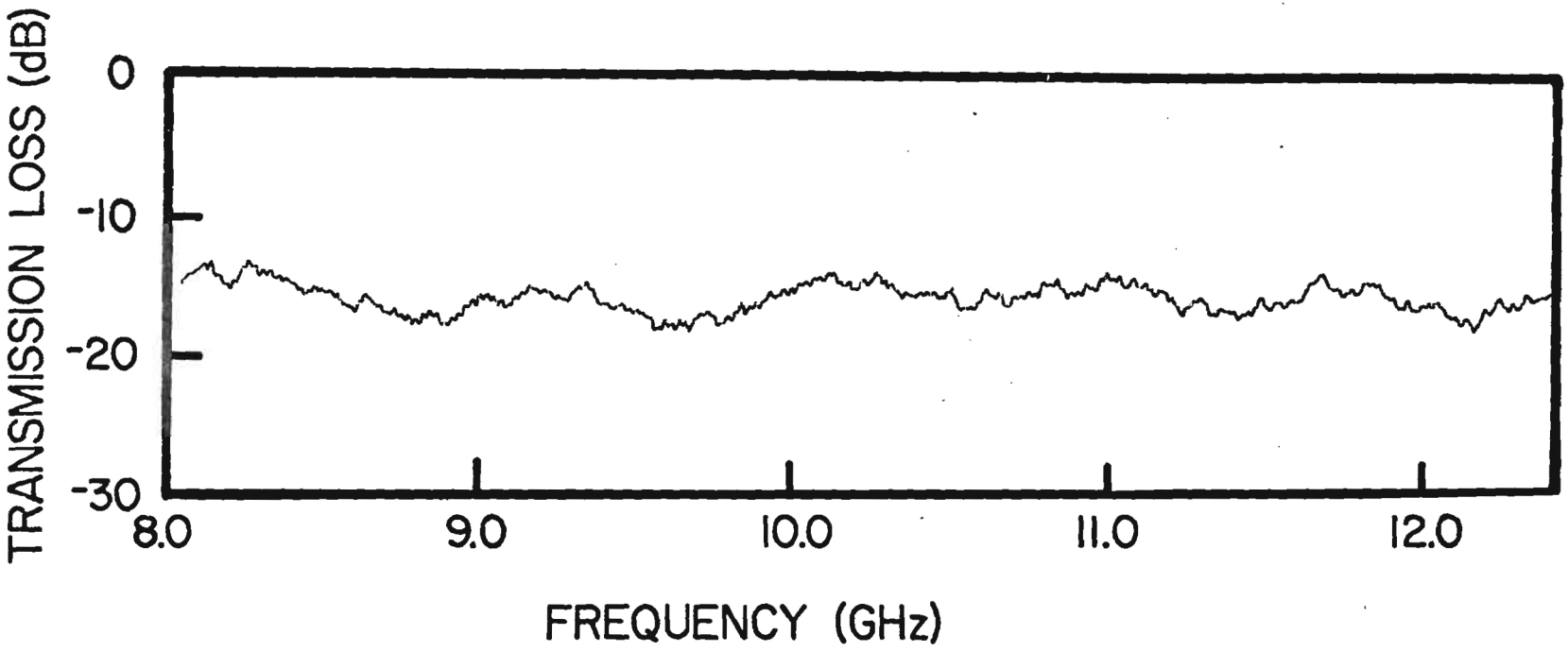

Figure 3. Transmission loss versus frequency for TBE radar camouflage cloth 2155-A-1 in the filler direction.

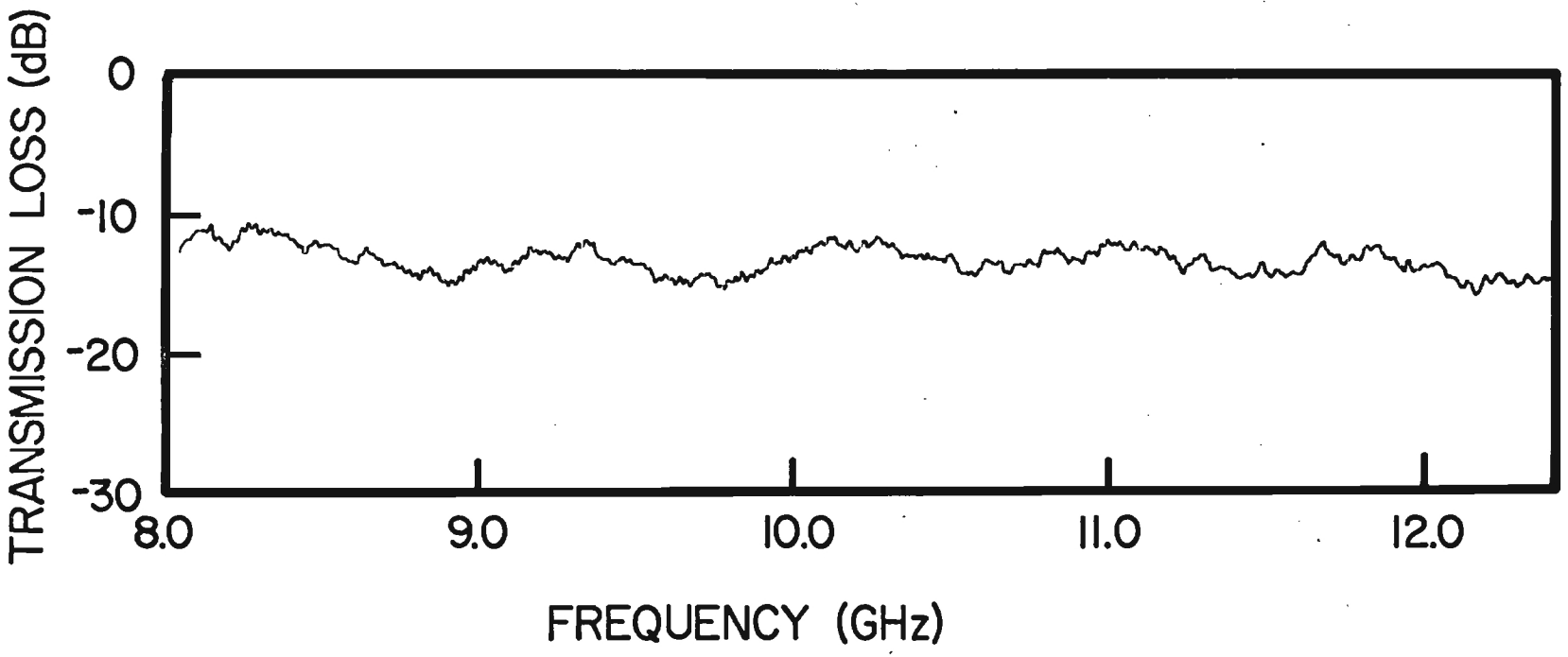

Figure 4. Transmission loss versus frequency for TBE radar camouflage cloth 2155-A-2 in the filler direction.

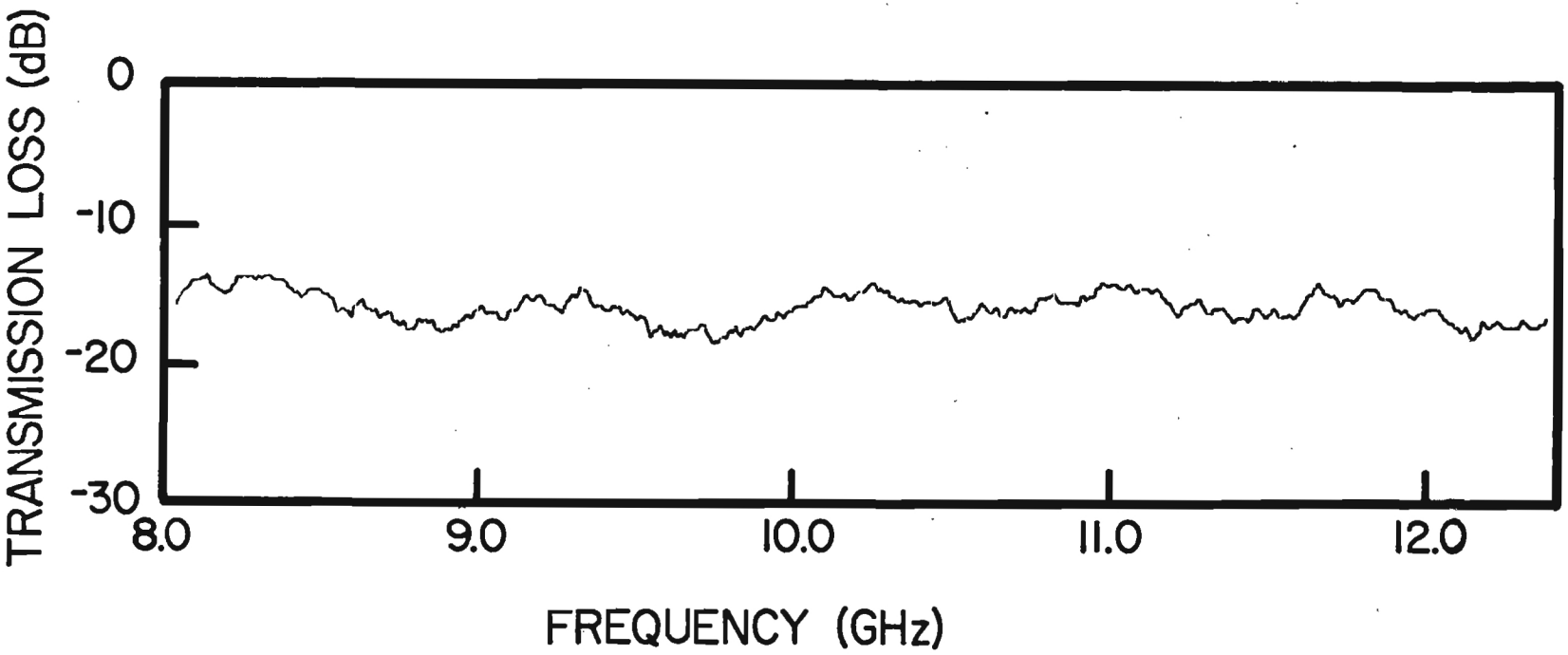

Figure 5. Transmission loss versus frequency for TBE radar camouflage cloth 2155-A-2 in the filler direction.

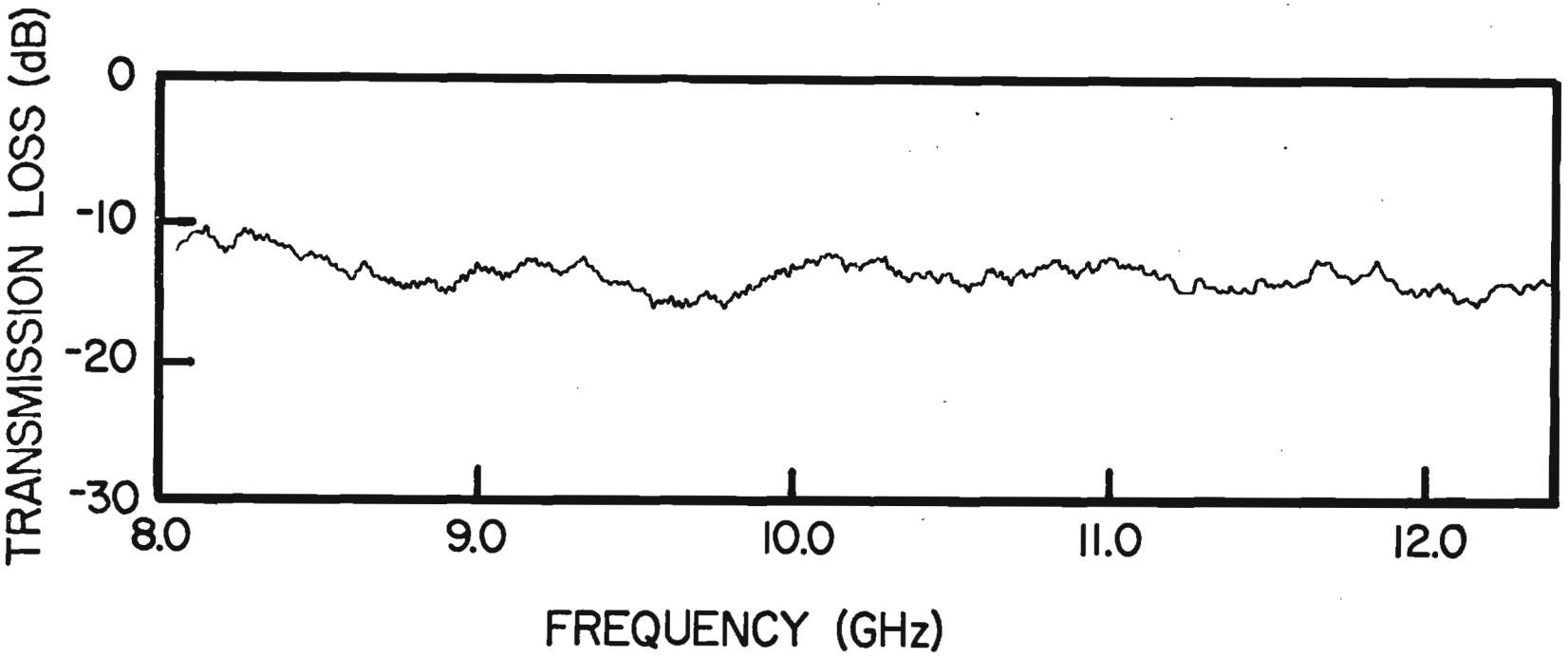

Figure 6. Transmission loss versus frequency for TBE radar camouflage cloth 2155-A-3 in the filler direction.

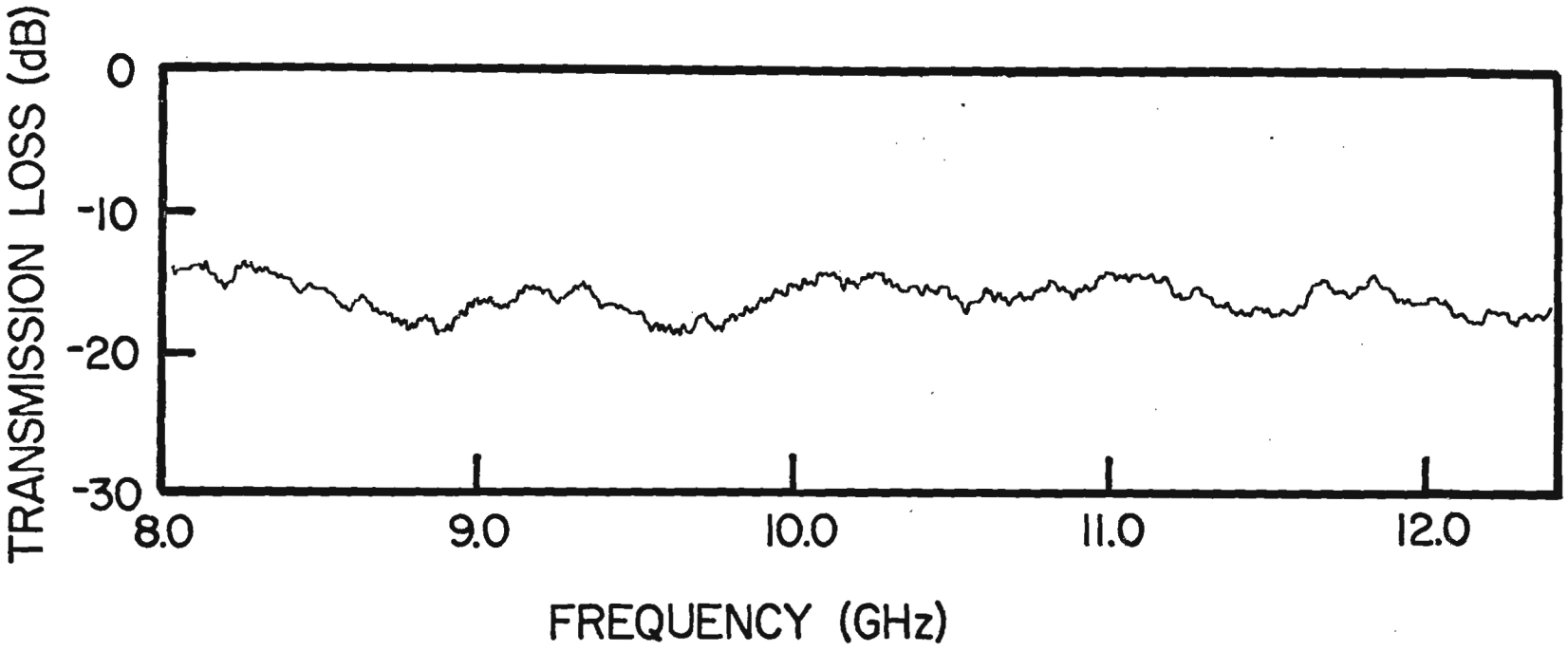

Figure 7. Transmission loss versus frequency for TBE radar camouflage cloth 2155-A-3 in the filler direction.

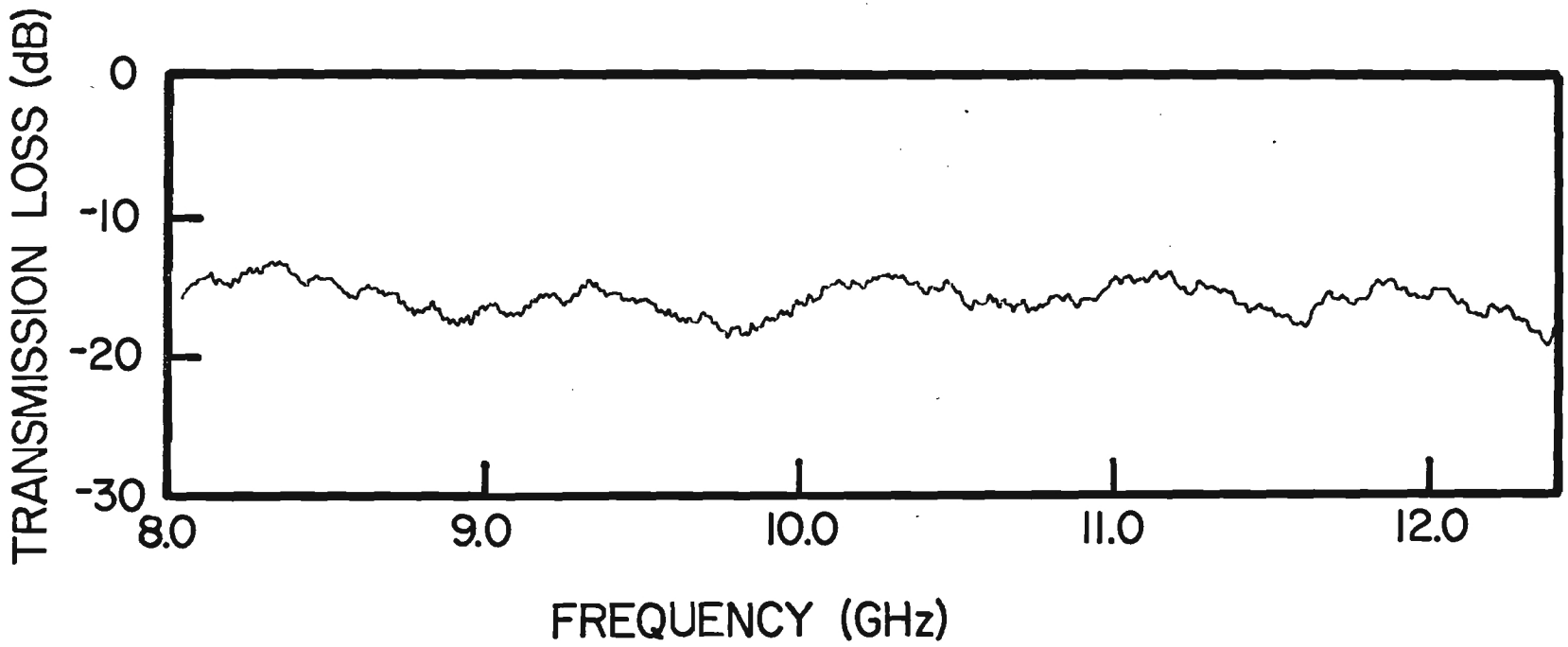

Figure 8. Transmission loss versus frequency for TBE radar camouflage cloth 2155-B-1 in the warp direction.

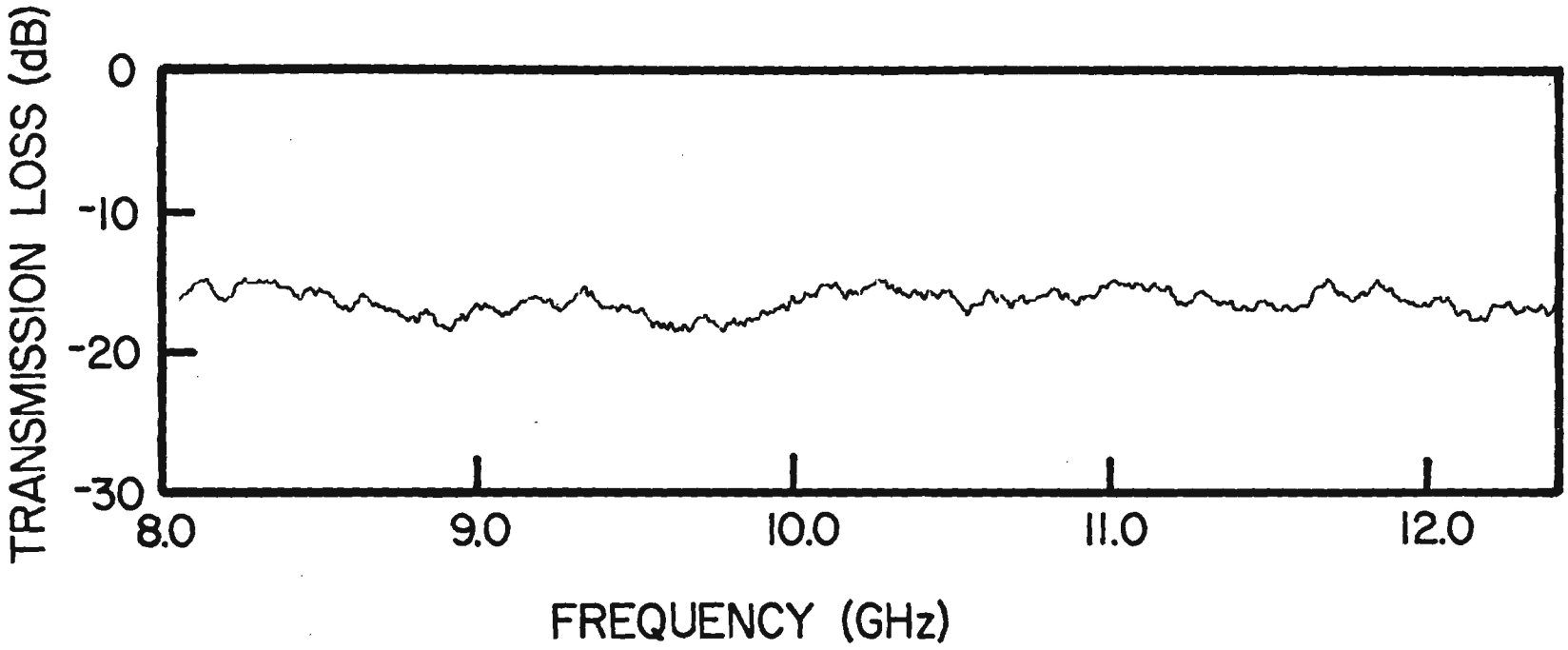

Figure 9. Transmission loss versus frequency for TBE radar camouflage cloth 2155-B-1 in the filler direction.

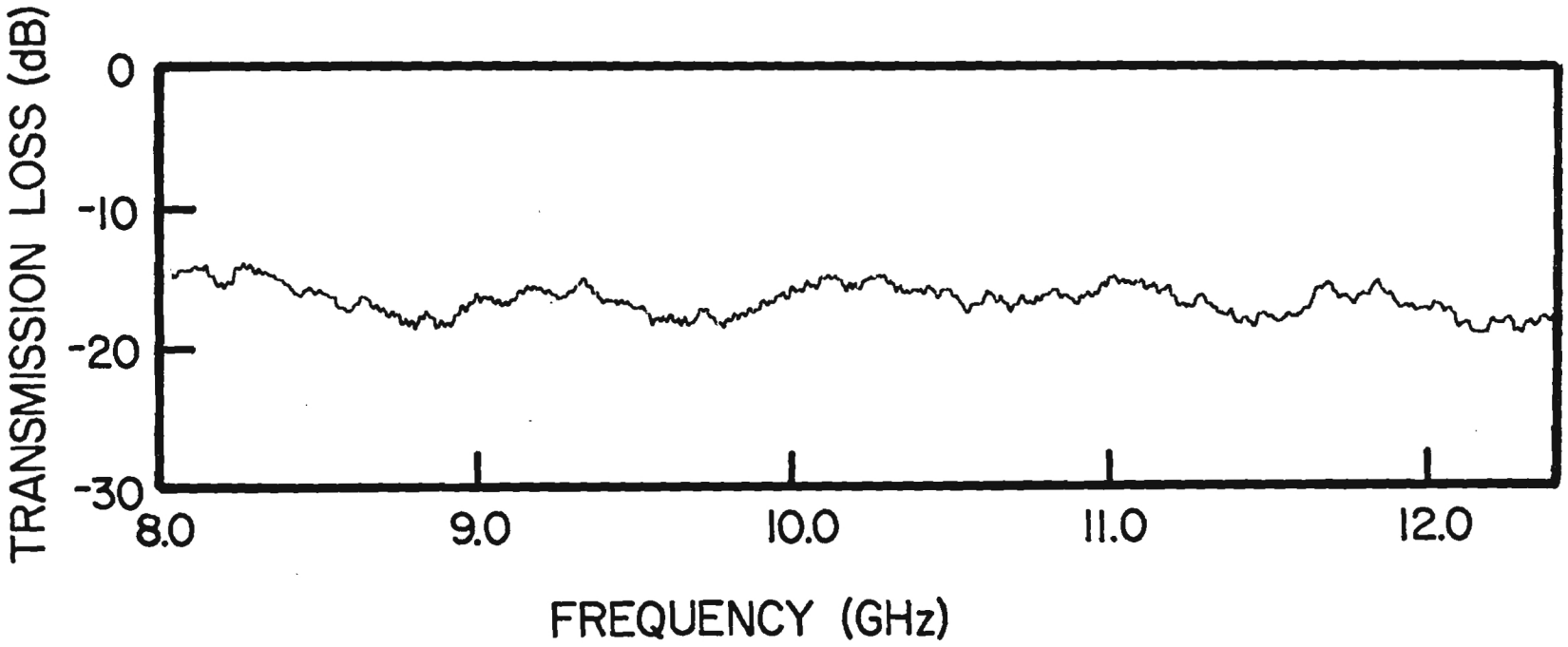

Figure 10. Transmission loss versus frequency for TBE radar camouflage cloth 2155-B-2 in the warp direction.

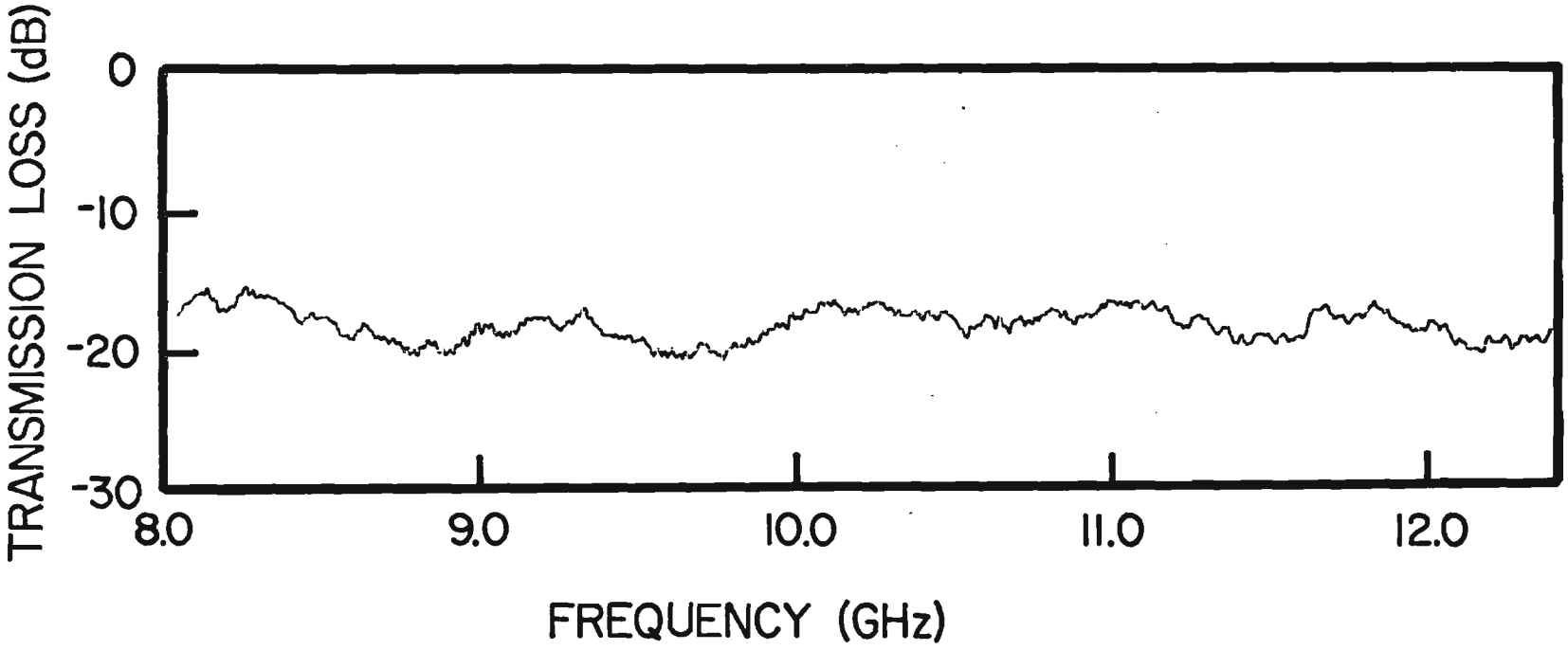

Figure 11. Transmission loss versus frequency for TBE radar camouflage cloth 2155-B-2 in the filler direction.

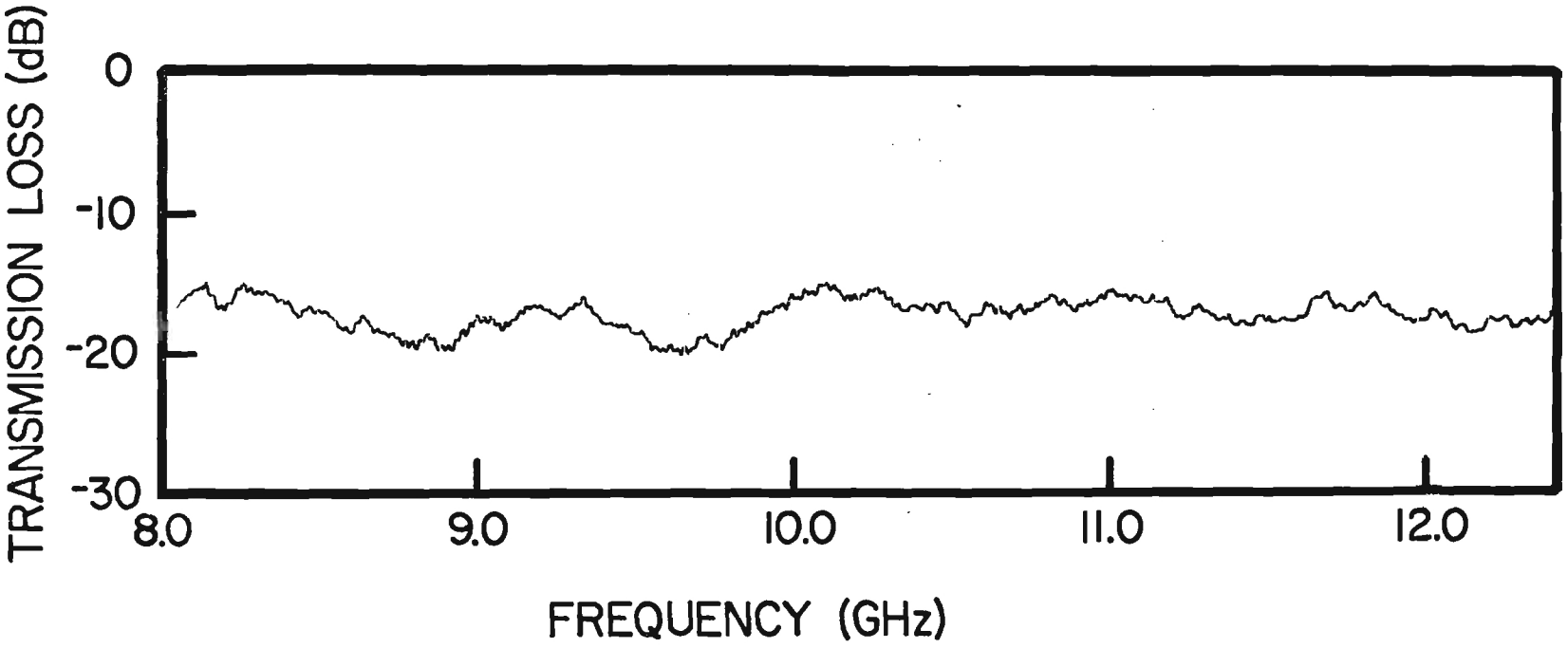

Figure 12. Transmission loss versus frequency for TBE radar camouflage cloth 2155-B-3 in the warp direction.

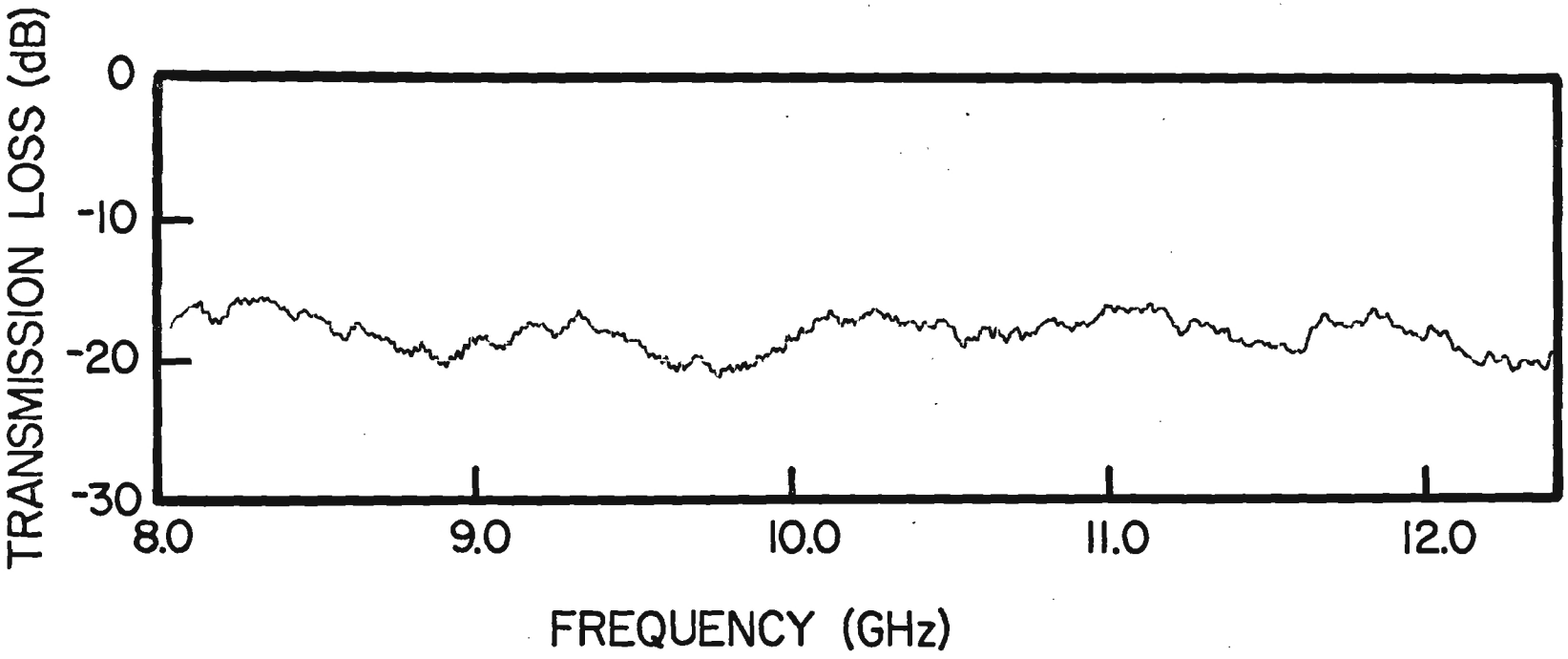

Figure 13. Transmission loss versus frequency for TBE radar camouflage cloth 2155-B-4 in the filler direction.

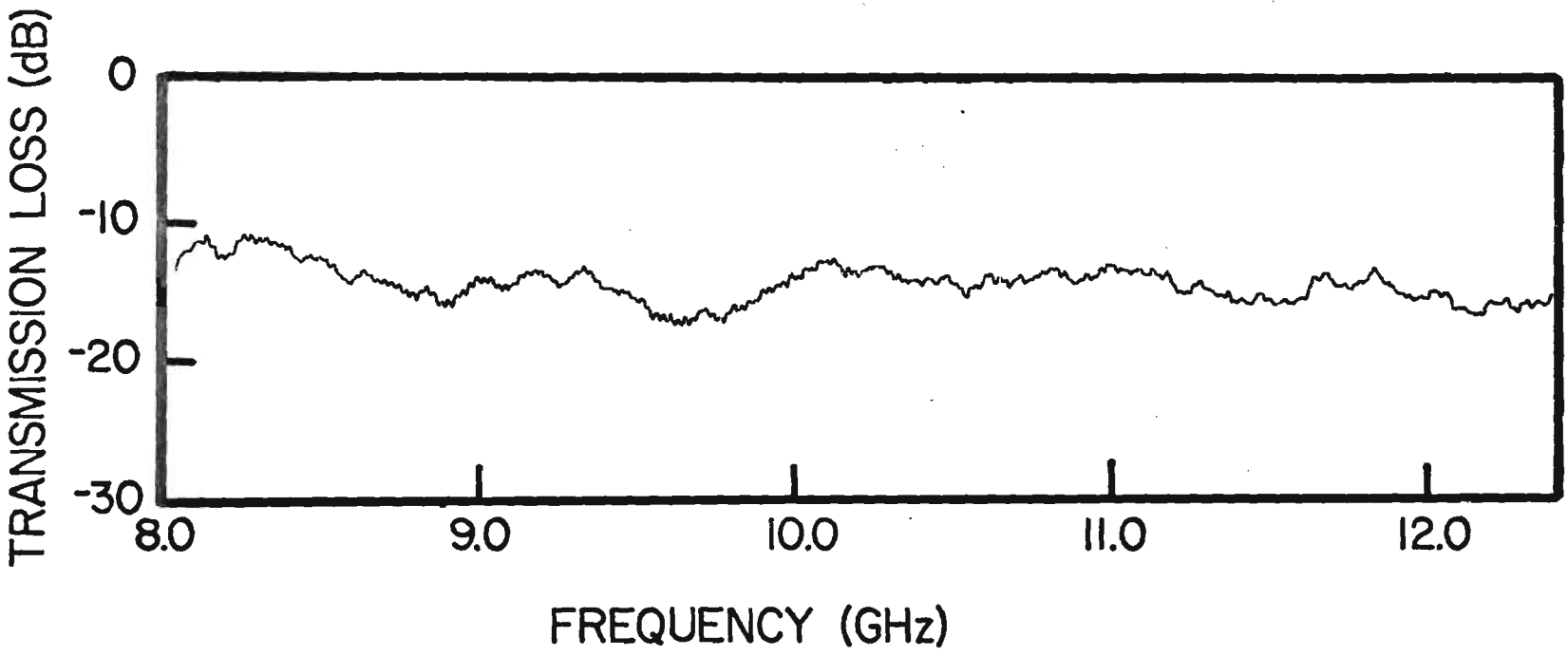

Figure 14. Transmission loss versus frequency for TBE radar camouflage cloth 2155-C-1 in the warp direction.

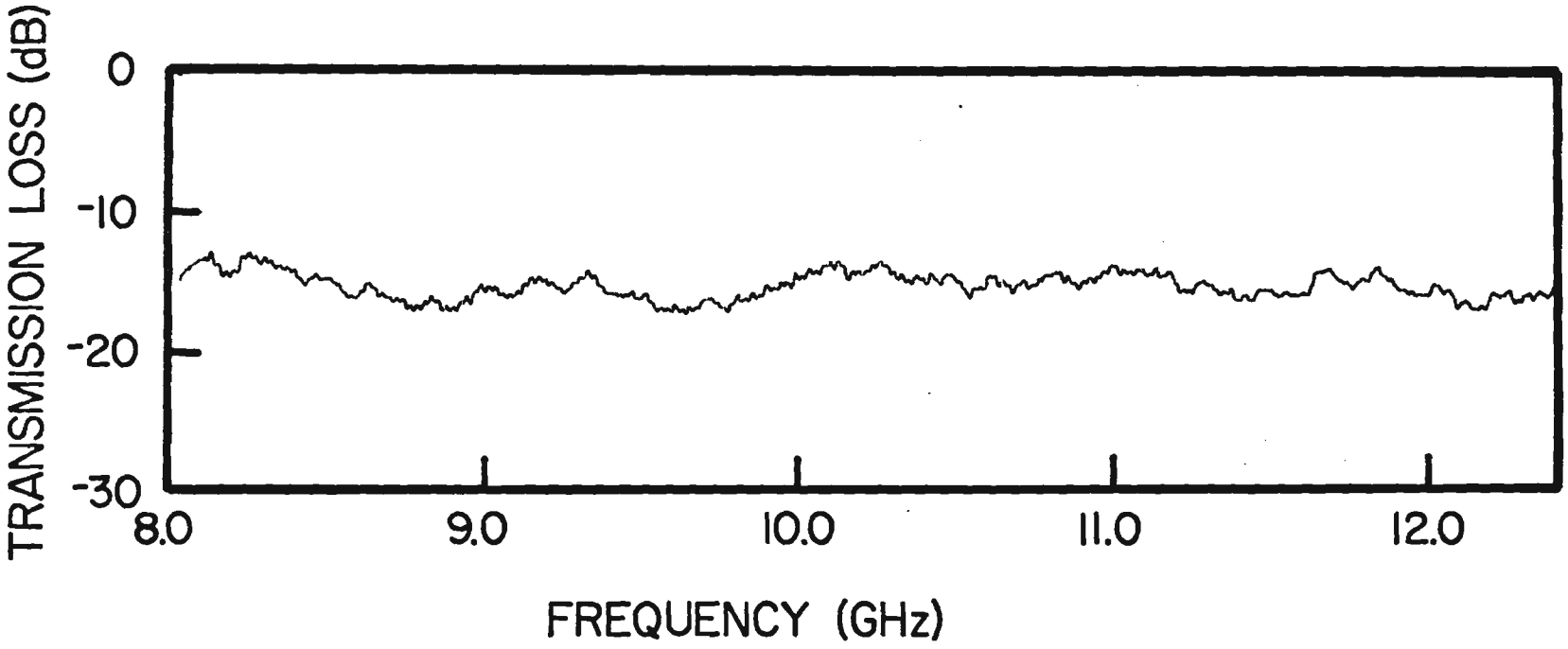

Figure 15. Transmission loss versus frequency for TBE radar camouflage cloth 2155-C-1 in the filler direction.

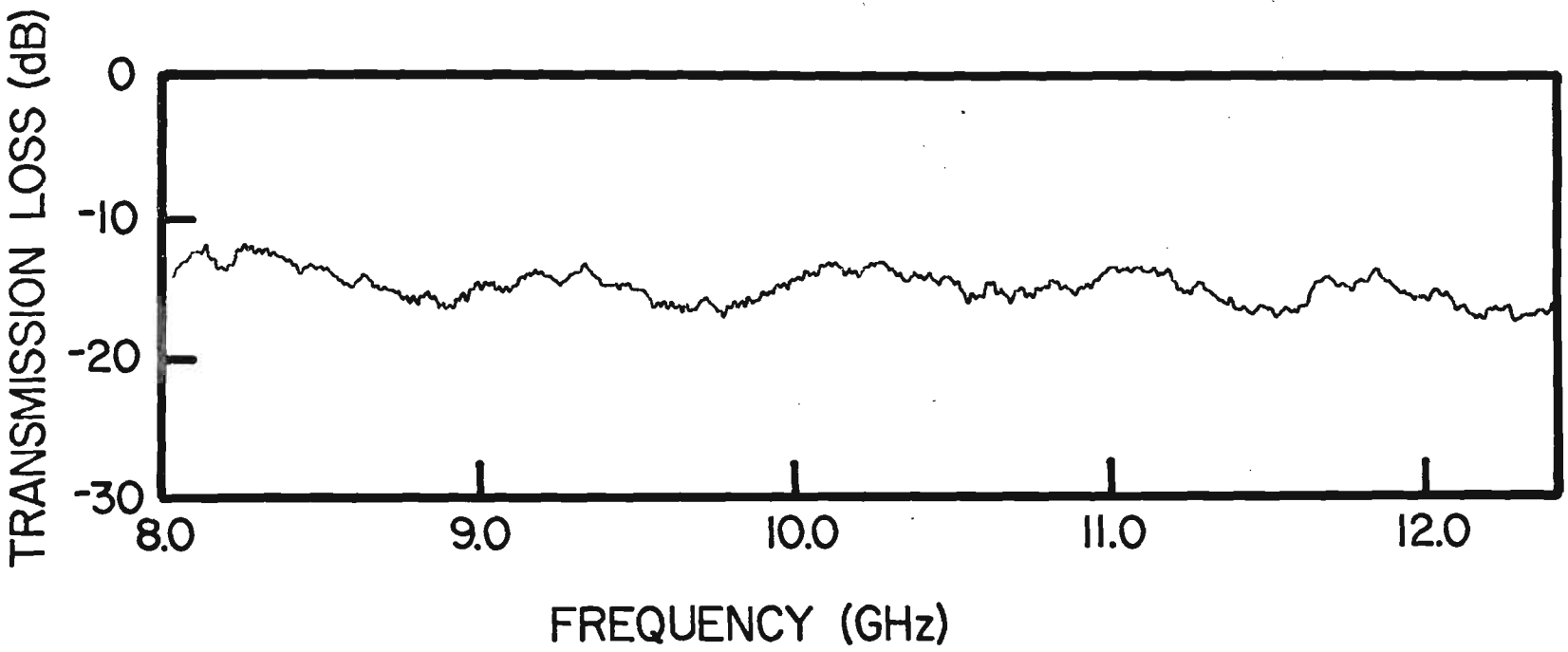

Figure 16. Transmission loss versus frequency for TBE radar camouflage cloth 2155-C-2 in the warp direction.

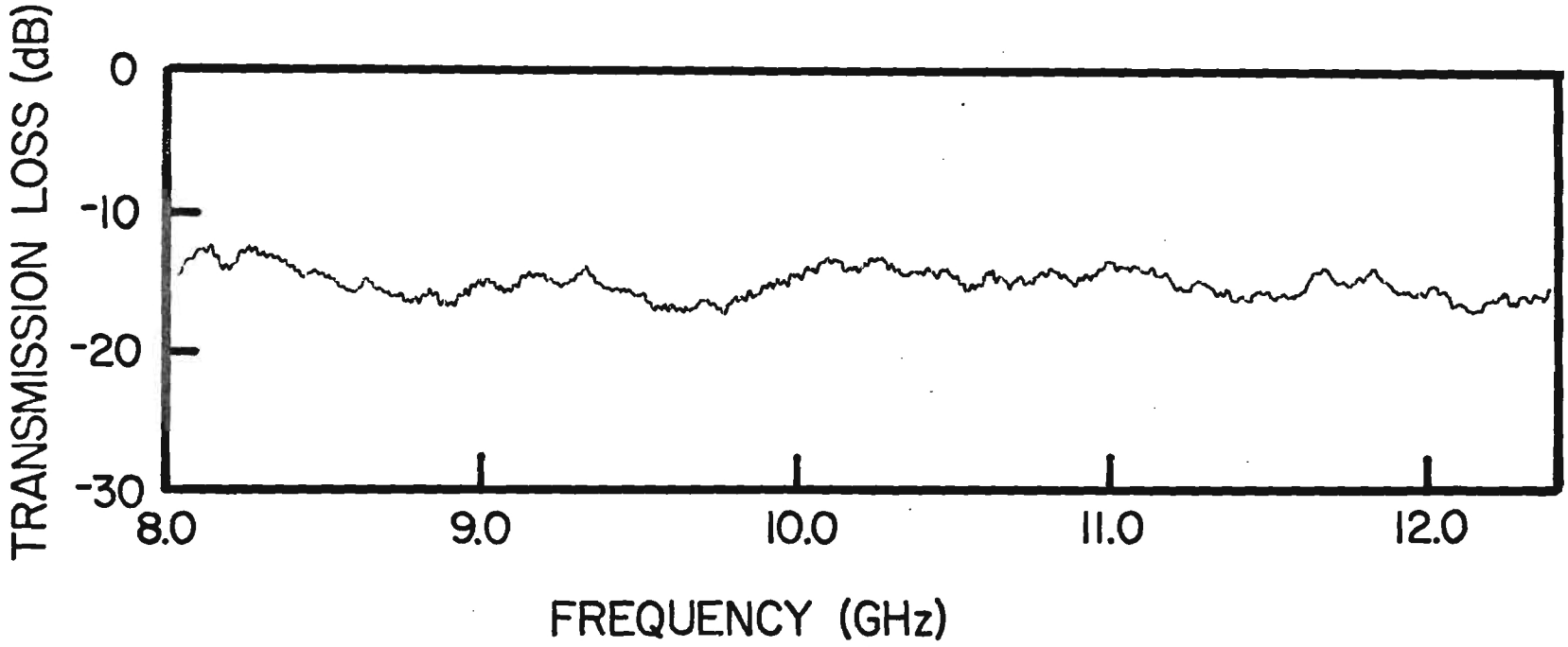

Figure 17. Transmission loss versus frequency for TBE radar camouflage cloth 2155-C-2 in the filler direction.

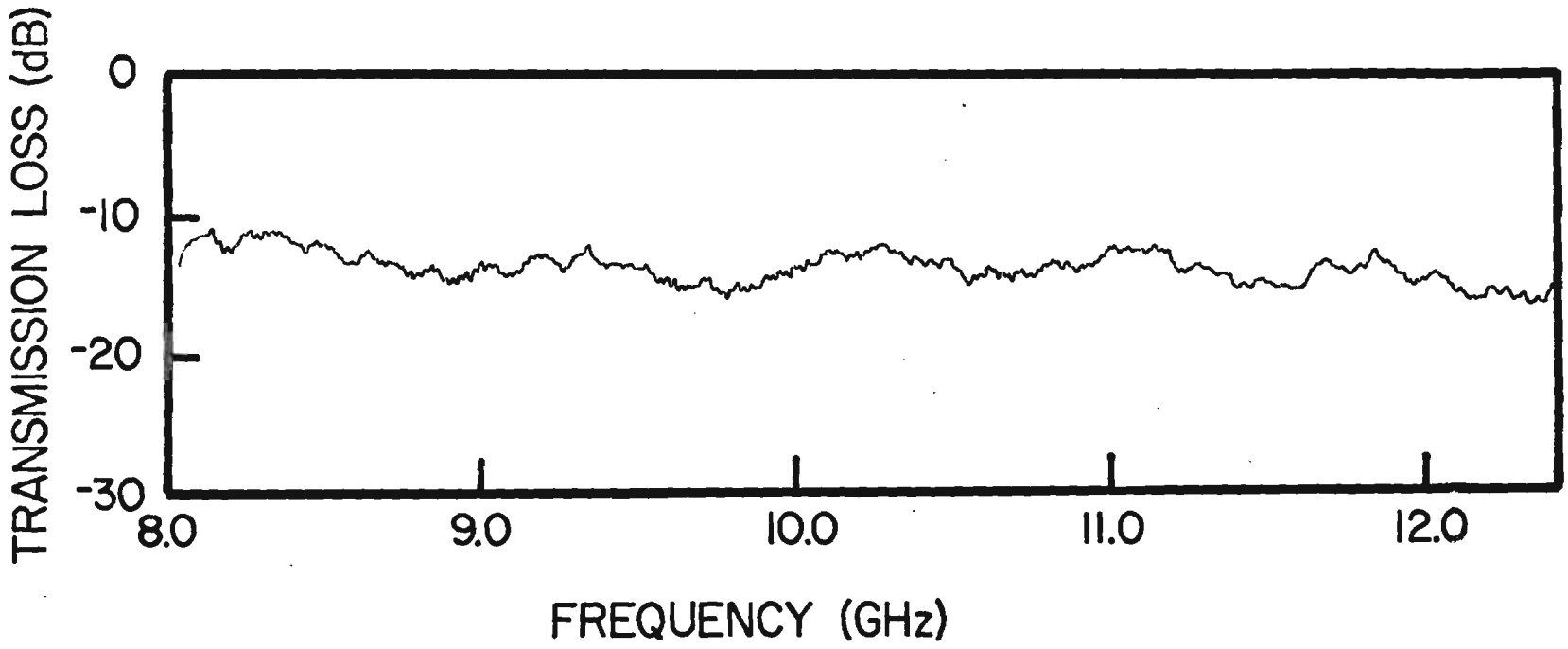

Figure 18. Transmission loss versus frequency for TBE radar camouflage cloth 2155-C-3 in the warp direction.

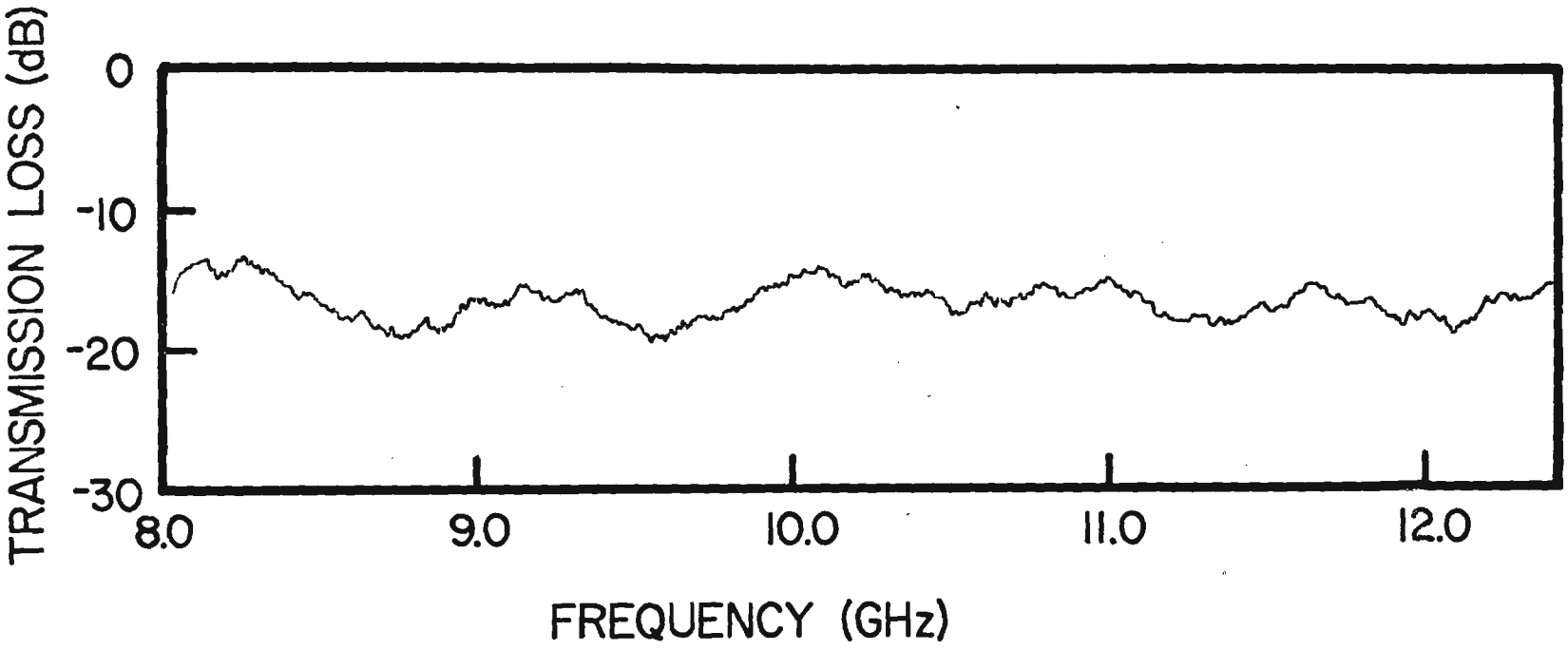

Figure 19. Transmission loss versus frequency for TBE radar camouflage cloth 2155-C-3 in the filler direction.

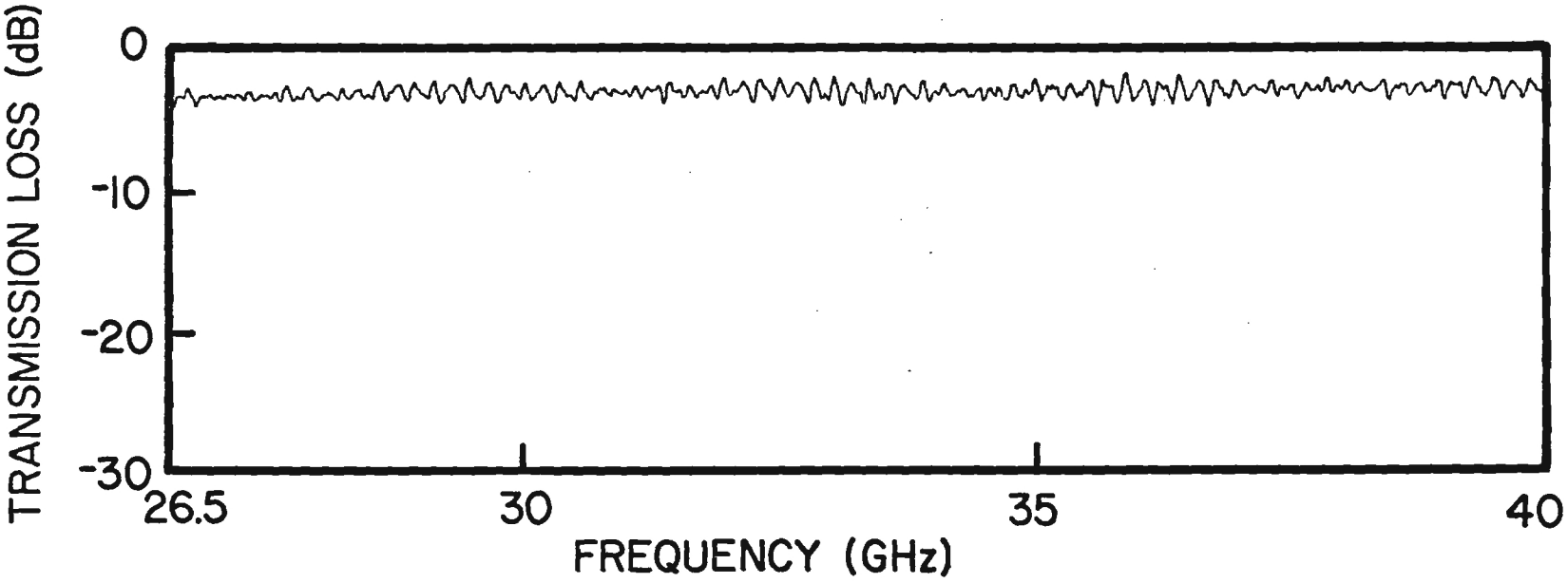

Figure 20. Transmission loss versus frequency for TBE radar camouflage cloth 2155-K-1 in the direction No. 1.

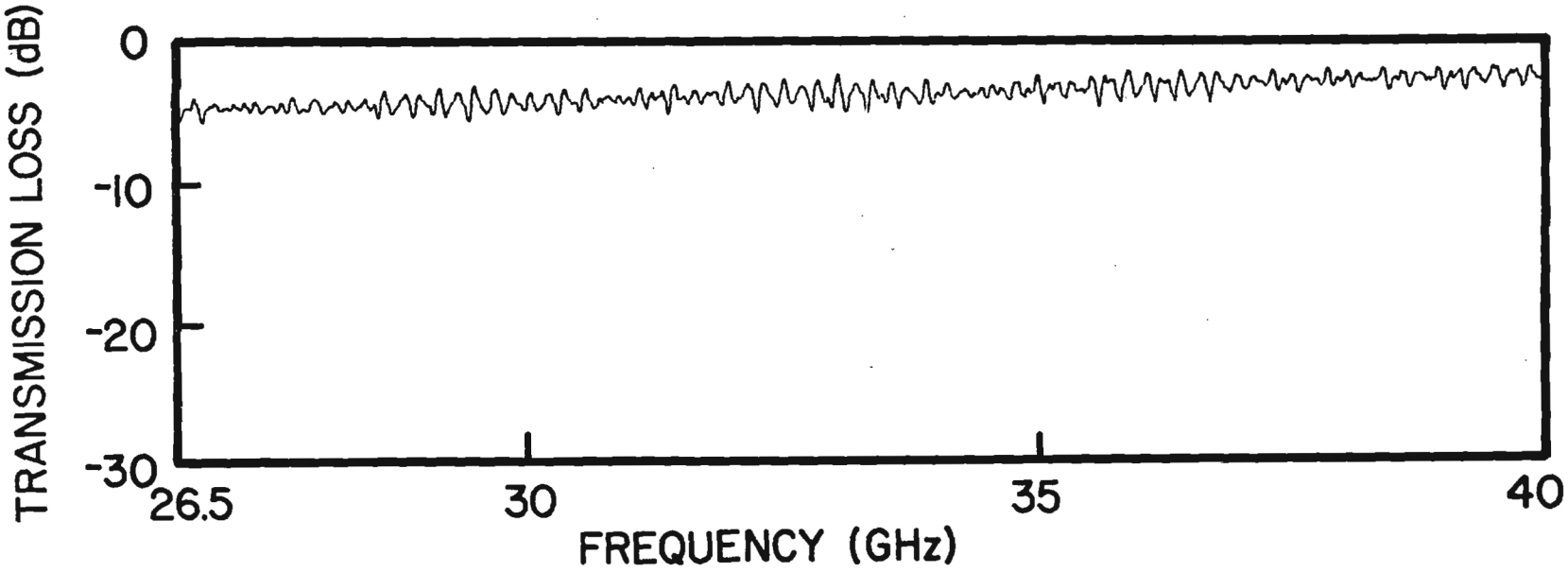

Figure 21. Transmission loss versus frequency for TBE radar camouflage cloth 2155-K-1 in the direction No. 2.

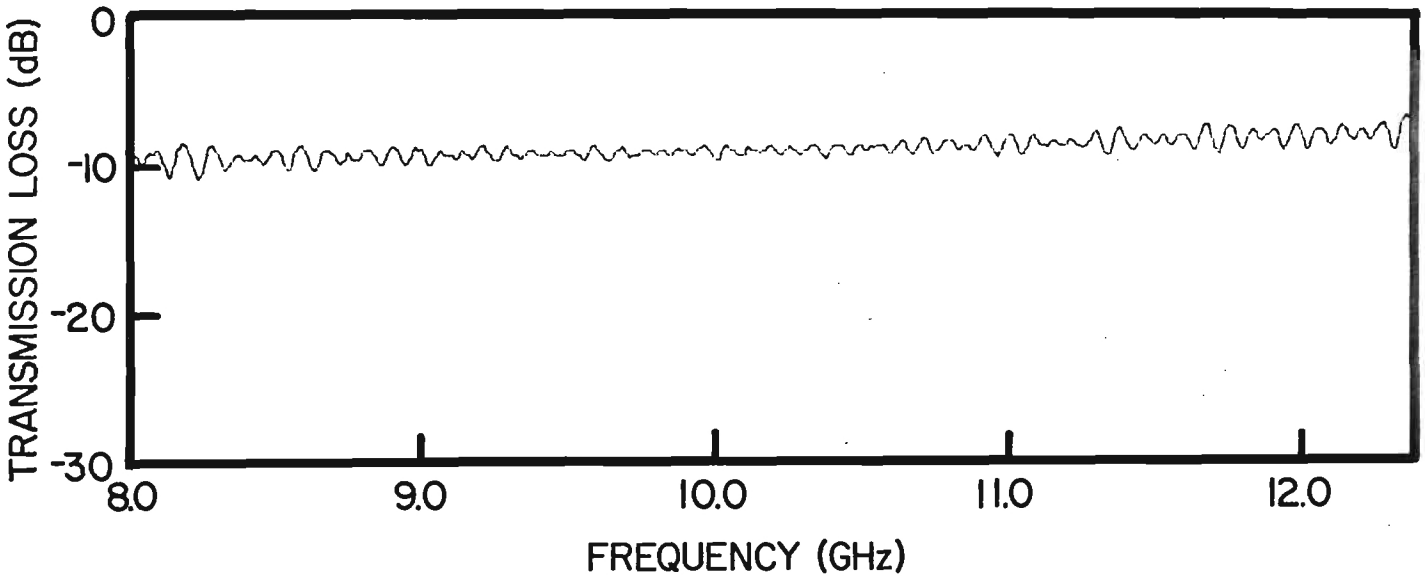

Figure 22. Transmission loss versus frequency for TBE radar camouflage cloth 2155-K-2 in the direction No. 1.

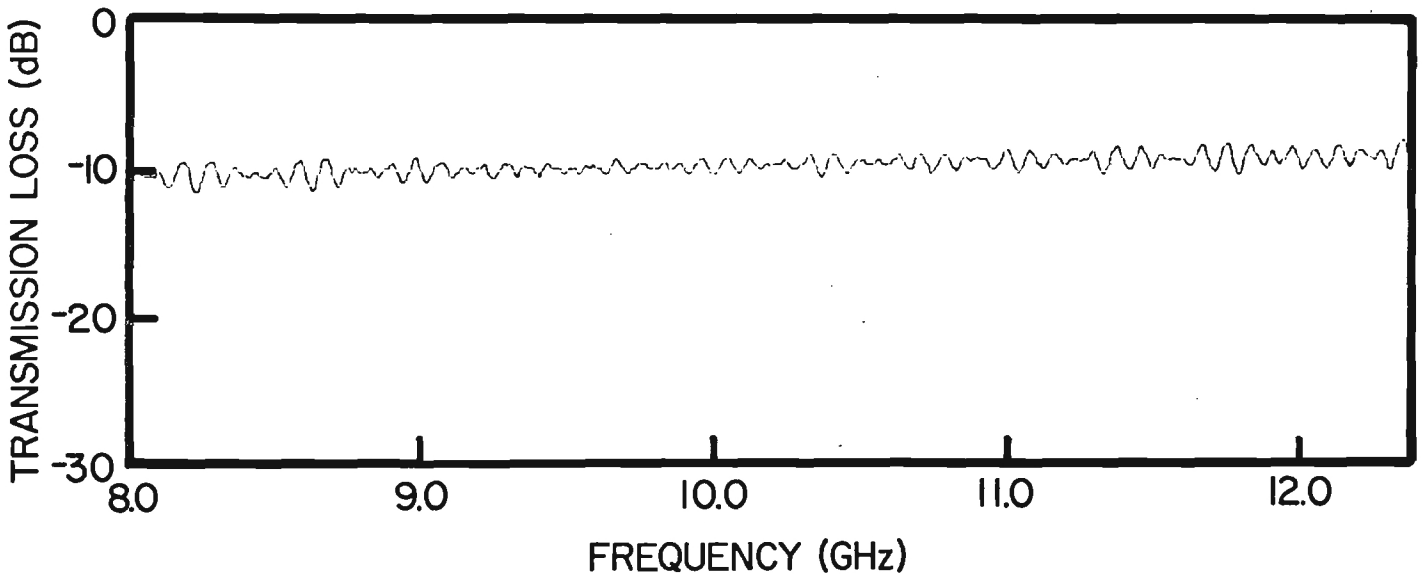

Figure 23. Transmission loss versus frequency for TBE radar camouflage cloth 2155-K-2 in the direction No. 2.

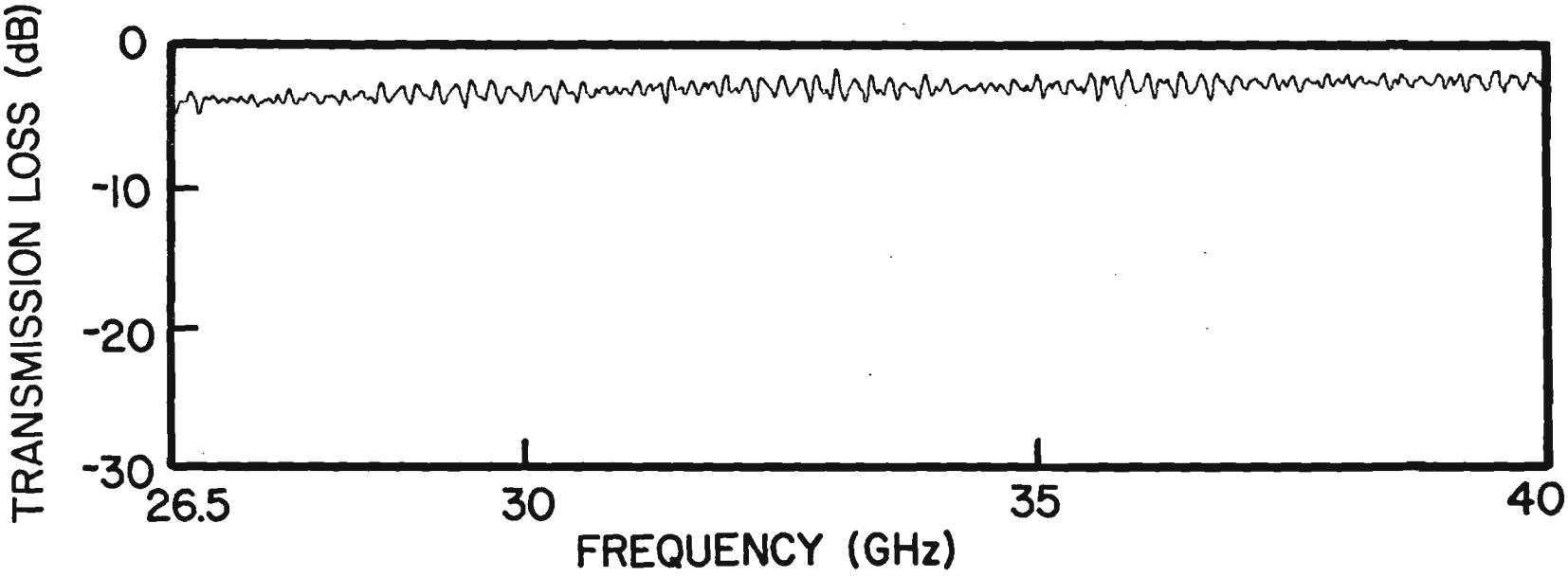

Figure 24. Transmission loss versus frequency for TBE radar camouflage cloth 2155-K-1 in the direction No. 1.

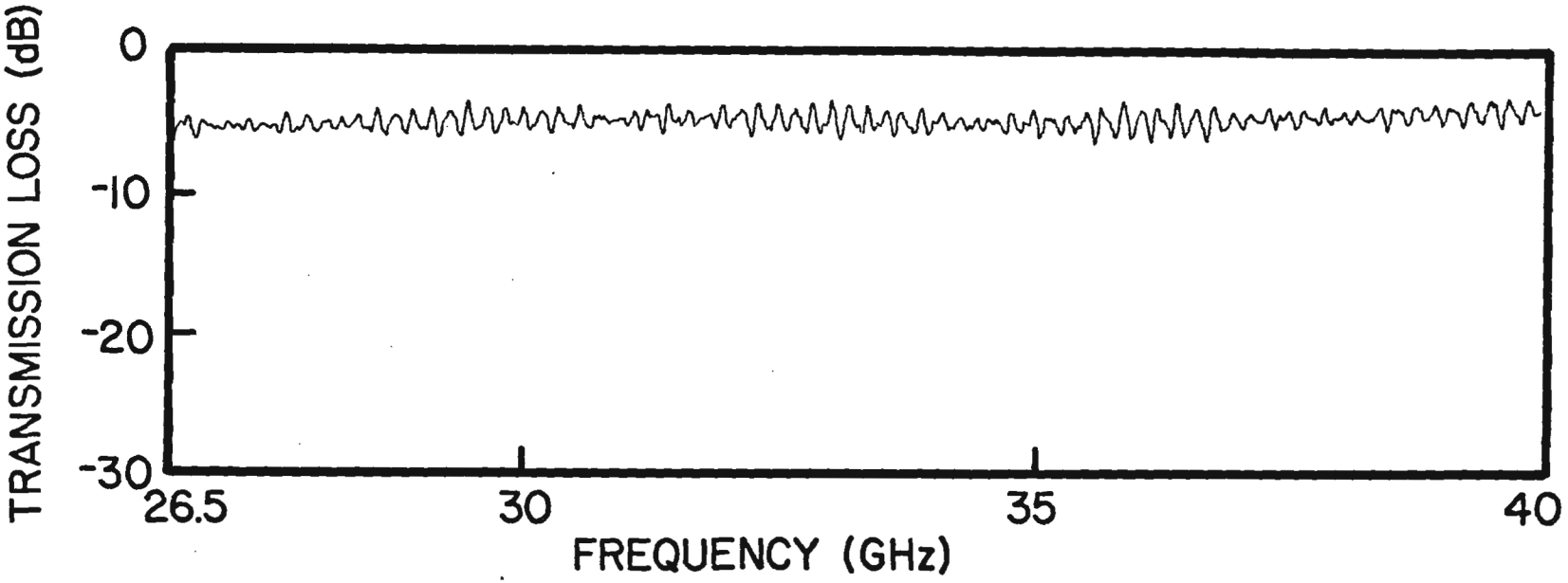

Figure 25. Transmission loss versus frequency for TBE radar camouflage cloth 2155-K-1 in the direction No. 2.

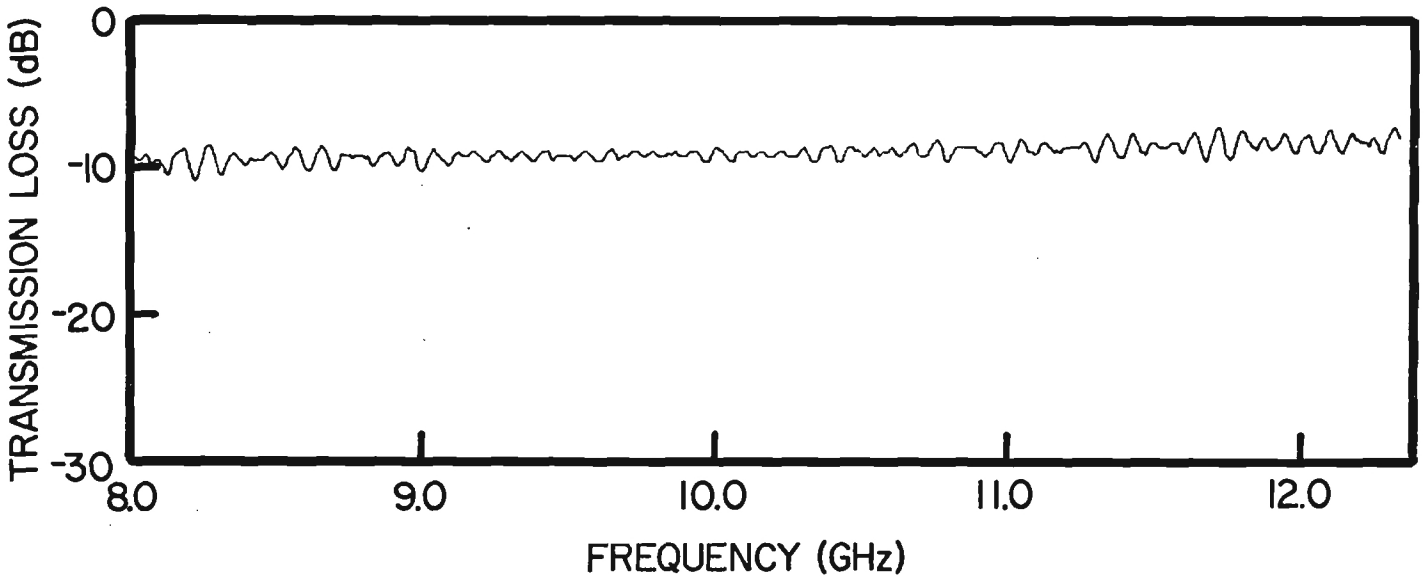

Figure 26. Transmission loss versus frequency for TBE radar camouflage cloth 2155-K-2 in the direction No. 1.

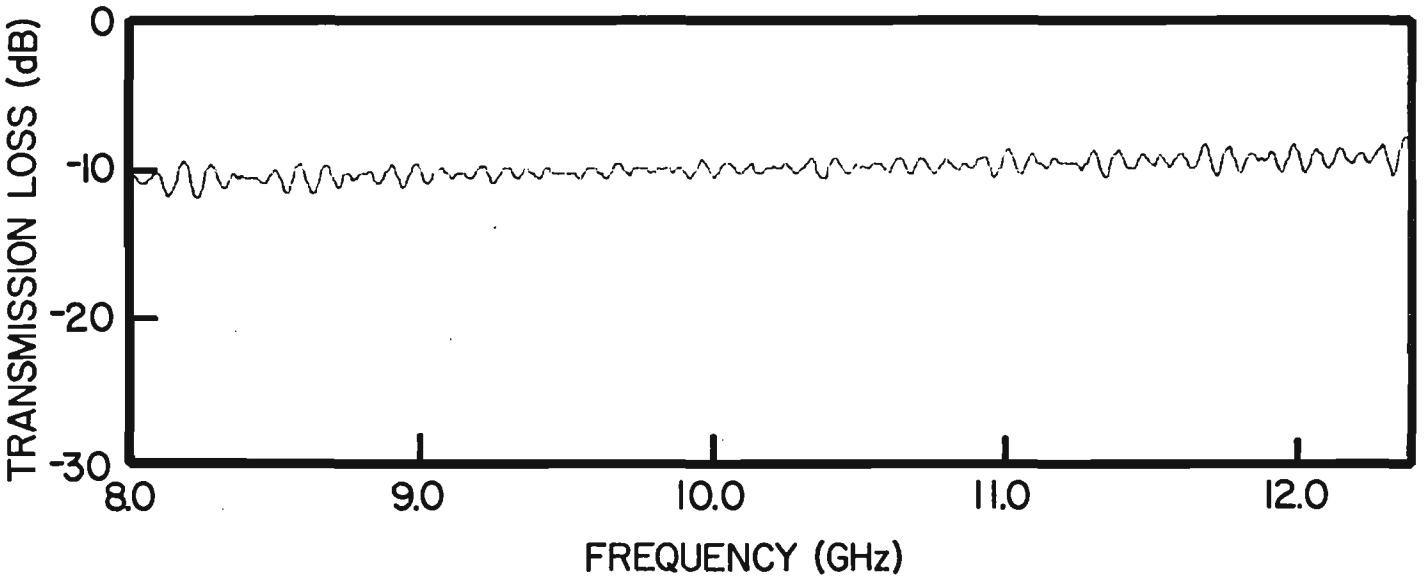

Figure 27. Transmission loss versus frequency for TBE radar camouflage cloth 2155-K-2 in the direction No. 2.